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LAKE ONTELAUNEE, BERKS COUNTY, PENNSYLVANIA

National Environmental Research Center

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June 1975

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# U.S. ENVIRONMENTAL PROTECTION AGENCY
# NATIONAL EUTROPHICATION SURVEY

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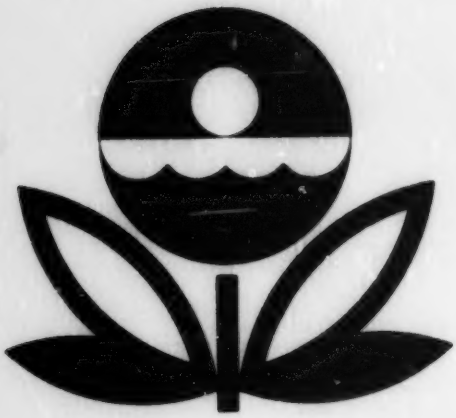

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16. ABSTRACT:

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

17. KEY WORDS AND DOCUMENT ANALYSIS

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|---|---|---|
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# REPORT
# ON
# LAKE ONTELAUNEE
# BERKS COUNTY
# PENNSYLVANIA
# EPA REGION III
# WORKING PAPER NO. 422-R

WITH THE COOPERATION OF THE

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES

AND THE

PENNSYLVANIA NATIONAL GUARD

JUNE, 1975

CONTENTS


| | Page |
|---|---|
| Foreword | ii |
| List of Pennsylvania Study Lakes | iv |
| Lake and Drainage Area Maps | v, vi |
| Sections | |
| I. Conclusions | 1 |
| II. Lake and Drainage Basin Characteristics | 4 |
| III. Lake Water Quality Summary | 5 |
| IV. Nutrient Loadings | 10 |
| V. Literature Reviewed | 15 |
| VI. Appendices | 16 |

# F O R E W O R D

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to fresh water lakes and reservoirs.

## OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

## ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

## LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the Pennsylvania Department of Environmental Resources for professional involvement and to the Pennsylvania National Guard for conducting the tributary sampling phase of the Survey.

Walter A. Lyon, Director of the Bureau of Water Quality Management, Richard M. Boardman, Chief of the Division of Water Quality, and James T. Ulanoski, Aquatic Biologist of the Division of Water Quality, provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

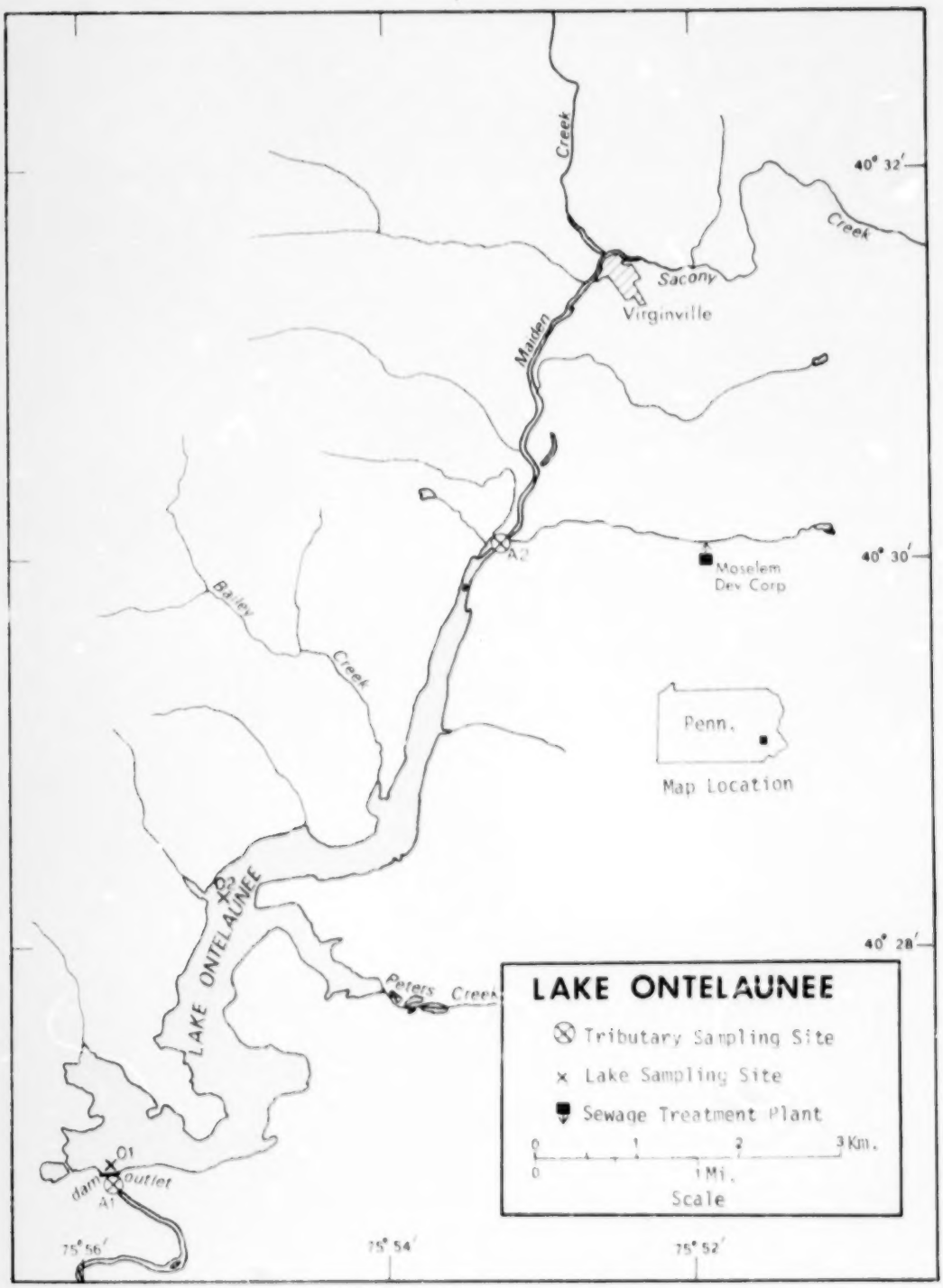
Major General Harry J. Mier, Jr., the Adjutant General of Pennsylvania, and Project Officer Major Ronald E. Wickard, who directed the volunteer efforts of the Pennsylvania National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

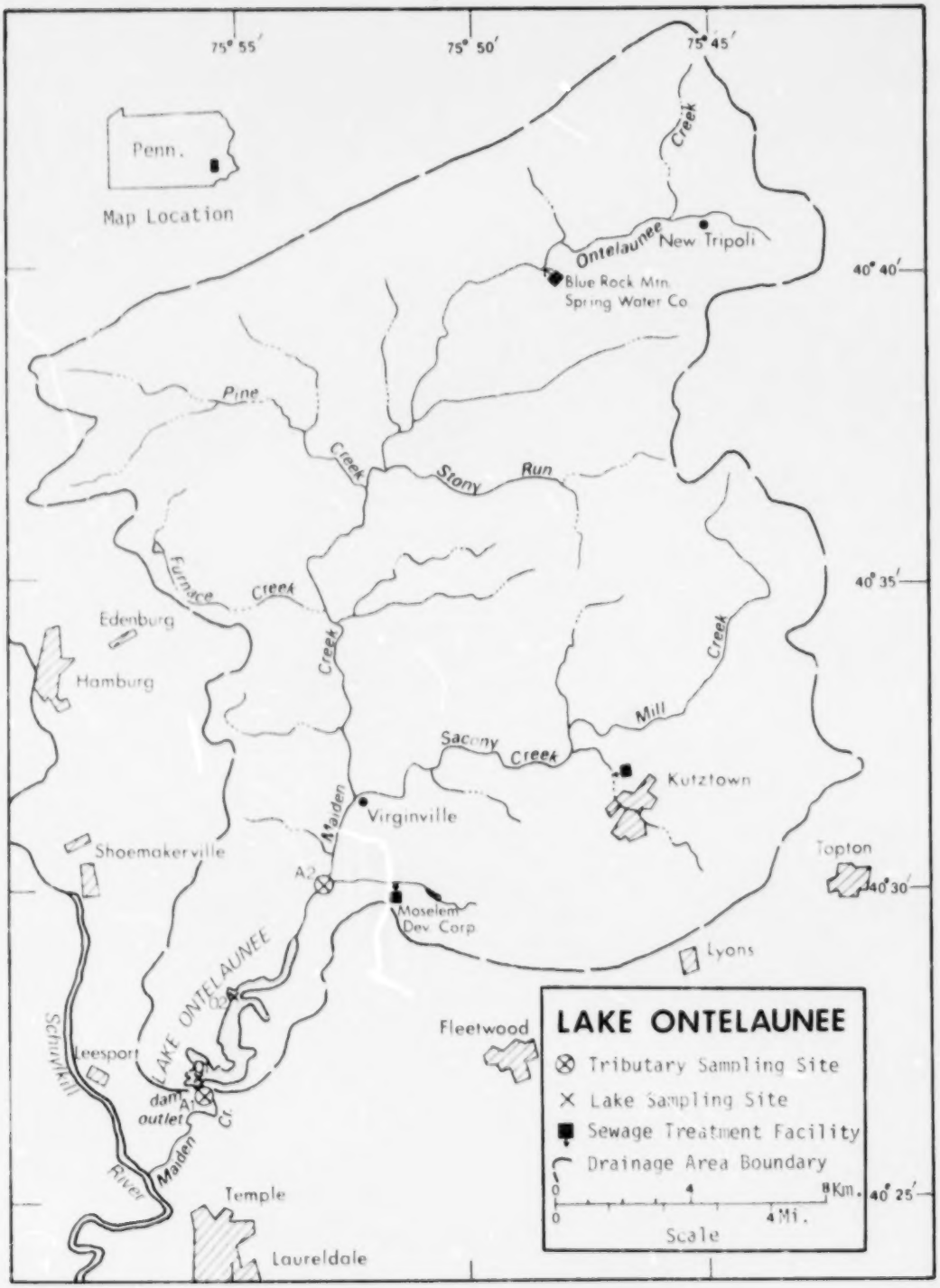
NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF PENNSYLVANIA

| LAKE NAME | COUNTY |
|---|---|
| Allegheny Reservoir | McKean, Warren, PA; Cattarugus, NY |
| Beaver Run Reservoir | Westmoreland |
| Beltzville | Carbon |
| Blanchard Reservoir | Centre |
| Canadohta | Crawford |
| Conneaut | Crawford |
| Conewago (Pinchot) | York |
| Greenlane | Montgomery |
| Harveys | Luzerne |
| Indian | Somerset |
| Naomi | Monroe |
| Ontelaunee | Berks |
| Pocono | Monroe |
| Pymatuning Reservoir | Crawford, PA; Ashtabula, OH |
| Shenango River Reservoir | Mercer |
| Stillwater | Monroe |
| Wallenpaupack | Pike, Wayne |


Creek
40° 32′
Creek
Sacony
Virginville
Marden
A2
Moselem
Dev Corp
40° 30′
Bailey
Creek
Penn.
Map Location
O3
LAKE ONTELAUNEE
40° 28′
Peters Creek
LAKE ONTELAUNEE
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Plant
0 1 2 3Km.
0 1Mi.
Scale
O1
dam
outlet
A1
75° 56′
75° 54′
75° 52′


75° 55′
75° 50′
75° 45′
Penn.
Map Location
Creek
Ontelaunee
New Tripoli
Blue Rock Mtn.
Spring Water Co.
40° 40′
Pine
Creek
Stony
Run
Furnace
Creek
40° 35′
Edenburg
Hamburg
Creek
Creek
Mill
Saccony
Creek
Kutztown
Maiden
Virginville
Shoemakerville
A2
Topton
40° 30′
Moselem
Dev Corp
Lyons
LAKE ONTELAUNEE
Fleetwood
Schuylkill
Leesport
dam
outlet
A1
River
Maiden
Temple
Laureldale
LAKE ONTELAUNEE
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Drainage Area Boundary
0 4 8 Km.
0 4 Mi.
Scale
40° 25′

# LAKE ONTELAUNEE*

STORET NO. 4225

## I. CONCLUSIONS

### A. Trophic Condition:

Survey data indicate that Lake Ontelaunee is eutrophic. It ranked fifteenth in overall trophic quality when the 17 Pennsylvania lakes sampled in 1973 were compared using a combination of six lake parameters**. Only four of the lakes had higher median total phosphorus levels, two had higher median dissolved phosphorus, none had higher median inorganic nitrogen, all lakes had greater mean Secchi disc transparency, and nine had less mean chlorophyll a. Depression of dissolved oxygen with depth occurred at both sampling stations in July and October, 1973.

Survey limnologists noted that the water was turbid on all sampling occasions. Algal blooms were observed on the second and third visits at station two and in the Maiden Creek section of the lake during the third visit. Floating and emergent aquatic weeds were observed near station one on the third visit.

### B. Rate-Limiting Nutrient:

The algal assay results show that Lake Ontelaunee was phosphorus limited at the time the assay sample was collected

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* Table of metric conversions--Appendix A.
** See Appendix B.

(04/13/73). The lake data indicate phosphorus limitation at all sampling times.

C. Nutrient Controllability:

1. Point sources--During the sampling year, Lake Ontelaunee received a total phosphorus load at a rate nearly three times that proposed by Vollenweider (Vollenweider and Dillon, 1974) as a eutrophic rate (see page 14). However, Vollenweider's model probably does not apply to water bodies with short hydraulic retention times, and the mean hydraulic retention time of Lake Ontelaunee is only 14 days.

It is calculated that the waste treatment plants included in the Survey contributed 17.3% of the total phosphorus load to the lake during the sampling year. Even complete removal of the phosphorus at these point sources would only reduce the loading rate to 4.00 $g/m^2/yr$. However, in view of the questionable applicability of the model and the phosphorus-limited condition of the lake, it is possible that a high degree of point-source phosphorus control would reduce the incidence and severity of nuisance algal blooms.

2. Non-point sources--It is estimated that non-point sources contributed about 82.6% of the total phosphorus load to Lake Ontelaunee during the sampling year. Maiden Creek, the only major tributary, had a relatively high phosphorus export rate of 39

kg/km$^2$/yr (see page 13). In view of the export N/P ratio of about 50/1, it is likely that the phosphorus export was the result of land-use practices in the Maiden Creek drainage.

## II. LAKE AND DRAINAGE BASIN CHARACTERISTICS

### A. Lake Morphometry†:

1. Surface area: 4.38 kilometers$^2$.
2. Mean depth: 3.4 meters.
3. Maximum depth: 9.4 meters.
4. Volume: 14.892 x $10^6$ $m^3$.
5. Mean hydraulic retention time: 14 days (based on outlet flow).

### B. Tributary and Outlet:
(See Appendix C for flow data)

1. Tributaries -

| Name | Drainage area ($km^2$)* | Mean flow ($m^3$/sec)* |
|---|---|---|
| Maiden Creek | 404.0 | 8.2 |
| Minor tributaries & immediate drainage - | 151.0 | 3.6 |
| Totals | 555.0 | 11.8 |

2. Outlet -

| | | |
|---|---|---|
| Maiden Creek | 559.4** | 12.0 |

### C. Precipitation***:

1. Year of sampling: 121.5 centimeters.
2. Mean annual: 111.7 centimeters.

† Ulanoski, 1975.
* For limits of accuracy, see Working Paper No. 175, "...Survey Methods, 1973-1976".
** Includes area of lake
*** See Working Paper No. 175.

## III. LAKE WATER QUALITY SUMMARY

Lake Ontelaunee was sampled three times during the open-water season of 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from two stations on the lake and from a number of depths at each station (see map, page v). During each visit, a single depth-integrated (4.6 m or near bottom to surface) sample was composited from the stations for phytoplankton identification and enumeration; and during the first visit, a single 18.9-liter depth-integrated sample was composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll *a* analysis. The maximum depths sampled were 7.9 meters at station 1 and 3.0 meters at station 2.

The lake sampling results are presented in full in Appendix D and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR ONTELAUNEE LAKE
STORET CODE 4225

| PARAMETER | 1ST SAMPLING ( 4/13/73) 2 SITES RANGE | MEAN | MEDIAN | 2ND SAMPLING ( 7/24/73) 2 SITES RANGE | MEAN | MEDIAN | 3RD SAMPLING (10/ 3/73) 2 SITES RANGE | MEAN | MEDIAN |
|---|---|---|---|---|---|---|---|---|---|
| TEMP (C) | 8.4 - 9.8 | 9.1 | 9.1 | 19.1 - 26.6 | 23.8 | 25.4 | 18.6 - 20.8 | 19.7 | 19.7 |
| DISS OXY (MG/L) | 10.6 - 11.4 | 11.0 | 11.0 | 0.2 - 11.9 | 5.9 | 6.7 | 4.2 - 12.4 | 8.8 | 9.3 |
| CNDCTVY (MCHOMO) | 190. - 200. | 196. | 197. | 170. - 235. | 204. | 207. | 244. - 260. | 252. | 252. |
| PH (STAND UNITS) | 7.3 - 8.0 | 7.7 | 7.6 | 7.0 - 9.1 | 8.4 | 8.8 | 7.4 - 9.2 | 8.5 | 8.6 |
| TOT ALK (MG/L) | 37. - 40. | 39. | 39. | 59. - 85. | 69. | 70. | 71. - 90. | 78. | 78. |
| TOT P (MG/L) | 0.015 - 0.039 | 0.025 | 0.029 | 0.033 - 0.057 | 0.044 | 0.046 | 0.030 - 0.073 | 0.048 | 0.043 |
| ORTHO P (MG/L) | 0.007 - 0.018 | 0.015 | 0.016 | 0.007 - 0.020 | 0.012 | 0.009 | 0.008 - 0.019 | 0.011 | 0.011 |
| NO2+NO3 (MG/L) | 2.400 - 3.200 | 2.983 | 3.050 | 1.430 - 2.480 | 2.000 | 2.000 | 1.350 - 2.040 | 1.677 | 1.655 |
| AMMONIA (MG/L) | 0.010 - 0.060 | 0.050 | 0.060 | 0.090 - 0.750 | 0.267 | 0.150 | 0.050 - 0.270 | 0.100 | 0.060 |
| KJEL N (MG/L) | 0.200 - 0.400 | 0.317 | 0.300 | 0.600 - 1.100 | 0.757 | 0.700 | 0.500 - 1.100 | 0.750 | 0.700 |
| INORG N (MG/L) | 2.460 - 3.260 | 3.033 | 3.085 | 2.090 - 2.590 | 2.267 | 2.150 | 1.410 - 2.150 | 1.777 | 1.710 |
| TOTAL N (MG/L) | 2.700 - 3.500 | 3.300 | 3.400 | 2.500 - 3.080 | 2.757 | 2.700 | 2.240 - 2.540 | 2.427 | 2.435 |
| CHLRPYL A (UG/L) | 2.8 - 2.9 | 2.8 | 2.8 | 9.6 - 12.9 | 11.2 | 11.2 | 16.2 - 26.3 | 21.2 | 21.2 |
| SECCHI (METERS) | 0.3 - 0.5 | 0.4 | 0.4 | 0.8 - 1.0 | 0.9 | 0.9 | 1.0 - 1.1 | 1.0 | 1.0 |

B. Biological characteristics:

1. Phytoplankton -

| Sampling Date | Dominant Genera | Algal units per ml |
|---|---|---|
| 04/13/73 | 1. Stephanodiscus | 680 |
| | 2. Asterionella | 107 |
| | 3. Cryptomonas | 67 |
| | 4. Melosira | 67 |
| | 5. Flagellates | 67 |
| | Other genera | 89 |
| | Total | 1,077 |
| 07/24/73 | 1. Scenedesmus | 181 |
| | 2. Coelastrum | 140 |
| | 3. Gloeocystis | 131 |
| | 4. Oocystis | 74 |
| | 5. Merismopedia | 49 |
| | Other genera | 114 |
| | Total | 689 |
| 10/03/73 | 1. Melosira | 4,698 |
| | 2. Fragilaria | 3,085 |
| | 3. Pediastrum | 111 |
| | 4. Chlorophyta filament | 91 |
| | 5. Oocystis | 81 |
| | Other genera | 94 |
| | Total | 8,160 |

2. Chlorophyll *a* -

| Sampling Date | Station Number | Chlorophyll *a* (µg/l) |
|---|---|---|
| 04/13/73 | 01 | 2.8 |
| | 02 | 2.9 |
| 07/24/73 | 01 | 12.9 |
| | 02 | 9.6 |
| 10/03/73 | 01 | 26.3 |
| | 02 | 16.2 |

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked -

| Spike (mg/l) | Ortho P Conc. (mg/l) | Inorganic N Conc. (mg/l) | Maximum yield (mg/l-dry wt.) |
|---|---|---|---|
| Control | 0.024 | 2.976 | 4.7 |
| 0.050 P | 0.074 | 2.976 | 25.9 |
| 0.050 P + 1.0 N | 0.074 | 3.976 | 24.5 |
| 1.0 N | 0.024 | 3.976 | 4.6 |

2. Discussion -

The control yield of the assay alga, *Selenastrum capricornutum*, indicates that the potential primary productivity of Lake Ontelaunee was high at the time the assay sample was collected. Only four of the 17 Pennsylvania lakes studied had a greater assay control yield.

The N/P ratio of the control sample, the response to the orthophosphorus spike, and the lack of response when only nitrogen was added, show that the control sample was phosphorus limited.

The lake data indicate phosphorus limitation at all sampling times; i.e., the mean N/P ratios were 162/1 or greater, and phosphorus limitation would be expected.

## IV. NUTRIENT LOADINGS
(See Appendix E for data)

For the determination of nutrient loadings, the Pennsylvania National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page vi), except for the high runoff month of April when two samples were collected. Sampling was begun in May, 1973, and was completed in April, 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Pennsylvania District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. Nutrient loads shown are those measured minus point-source loads, if any.

Nutrient loads for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated using the adjusted nutrient loads at station A-2, in $kg/km^2/year$, and multiplying by the ZZ area in $km^2$.

The operators of the Kutztown and Blue Rock Mountain Spring Water Company wastewater treatment plants provided monthly effluent samples and corresponding flow data. The Moselem Development Corporation did

* See Working Paper No. 175.

not participate in the Survey, and nutrient loads were estimated at 1.134 kg P and 3.401 kg N/capita/year. The community of Virginville was assumed to be served by septic tanks, and nutrient loads attributed to that source are included in the septic tank loads.

A. Waste Sources:

1. Known muncipal* -

| Name | Pop. Served | Treatment | Mean Flow ($m^3/d$) | Receiving Water |
|---|---|---|---|---|
| Kutztown | 10,000 | trickling filter | 3,516.3 | Sacony Creek |
| Moselem Development Corp. | 150 | act. sludge | 56.8** | Moselem Creek |
| Blue Rock Mtn. Spring Water Co. | 30 | sand filter | 3.6 | Ontelaunee Creek |

2. Known industrial - None

* Treatment plant questionnaires.
** Estimated at 0.3785 $m^3$/capita/day.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

| Source | kg P/ yr | % of total |
|---|---|---|
| a. Tributaries (non-point load) - | | |
| Maiden Creek | 15,870 | 75.7 |
| b. Minor tributaries & immediate drainage (non-point load) - | 1,360 | 6.5 |
| c. Known municipal STP's - | | |
| Kutztown | 3,445 | 16.4 |
| Moselem Development Corp. | 170 | 0.8 |
| Blue Rock Mtn. Spring Water | 5 | <0.1 |
| d. Septic tanks* - | 30 | 0.1 |
| e. Known industrial - None | - | - |
| f. Direct precipitation** - | 75 | 0.4 |
| Total | 20,955 | 100.0 |

2. Outputs -

Lake outlet - Maiden Creek 18,255

3. Net annual P accumulation - 2,700 kg.

* Estimate based on 96 shoreline dwellings along Maiden Creek and 14 dwellings along Sacony Creek; see Working Paper No. 175.
** See Working Paper No. 175.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

| Source | kg N/yr | % of total |
|---|---|---|
| a. Tributaries (non-point load) - | | |
| Maiden Creek | 780,160 | 72.7 |
| b. Minor tributaries & immediate drainage (non-point load) - | 276,030 | 25.7 |
| c. Known municipal STP's - | | |
| Kutztown | 10,510 | 1.0 |
| Moselem Development Corp. | 510 | <0.1 |
| Blue Rock Mtn. Spring Water | 15 | <0.1 |
| d. Septic tanks* - | 1,170 | 0.1 |
| e. Known industrial - None | - | - |
| f. Direct precipitation** - | 4,730 | 0.4 |
| Total | 1,073,125 | 100.0 |

2. Outputs -

Lake outlet - Maiden Creek 1,254,715

3. Net annual N loss - 181,590 kg.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

| Tributary | kg P/km$^2$/yr | kg N/km$^2$/yr |
|---|---|---|
| Maiden Creek | 39 | 1,931 |

* Estimate based on 96 shoreline dwellings along Maiden Creek and 14 dwellings along Sacony Creek; see Working Paper No. 175.
** See Working Paper No. 175.

E. Yearly Loading Rates:

In the following table, the existing phosphorus loading rates are compared to those proposed by Vollenweider (Vollenweider and Dillon, 1974). Essentially, his "dangerous" rate is the rate at which the receiving water would become eutrophic or remain eutrophic; his "permissible" rate is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic rate would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with short hydraulic retention times.

| | Total Phosphorus | | Total Nitrogen | |
|---|---|---|---|---|
| | Total | Accumulated | Total | Accumulated |
| grams/$m^2$/yr | 4.78 | 0.62 | 245.0 | loss* |

Vollenweider loading rates for phosphorus ($g/m^2/yr$) based on mean depth and mean hydraulic retention time of Lake Ontelaunee:

| | |
|---|---|
| "Dangerous" (eutrophic rate) | 1.76 |
| "Permissible" (oligotrophic rate) | 0.88 |

* There was an apparent loss of nitrogen during the sampling year. This may have been due to nitrogen fixation in the lake, solubilization of previously sedimented nitrogen, recharge with nitrogen-rich ground water, unknown and unsampled point sources discharging directly to the lake, or underestimation of the nitrogen loads from the upper Maiden Creek drainage area. Whatever the cause, a similar nitrogen loss has occurred at Shagawa Lake, Minnesota, which has been intensively studied by EPA's National Eutrophication and Lake Restoration Branch (Malueg et al., 1975).

## V. LITERATURE REVIEWED

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Ulanoski, James, 1975. Personal communication (lake morphometry). PA Dept. of Env. Resources, Harrisburg.

Vollenweider, R. A., and P. J. Dillon, 1974. The application of the phosphorus loading concept to eutrophication research. Natl. Res. Council of Canada Publ. No. 13690, Canada Centre for Inland Waters, Burlington, Ontario.

# VI APPENDICES

## APPENDIX A

## CONVERSION FACTORS

## CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x $8.107 \times 10^{-4}$ = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

# APPENDIX B

## LAKE RANKINGS

LAKES RANKED BY INDEX NOS.

| RANK | LAKE CODE | LAKE NAME | INDEX NO |
|---|---|---|---|
| 1 | 4224 | LAKE NAOMI | 445 |
| 2 | 4220 | BELTZVILLE DAM | 423 |
| 3 | 4222 | HARVEY'S LAKE | 413 |
| 4 | 4228 | STILLWATER LAKE | 401 |
| 5 | 4227 | POCONO LAKE | 389 |
| 6 | 4223 | INDIAN LAKE | 388 |
| 7 | 3641 | ALLEGHENY RESERVOIR | 385 |
| 8 | 4229 | LAKE WALLENPAUPACK | 371 |
| 9 | 4221 | CANADOHTA LAKE | 369 |
| 10 | 4219 | BEAVER RUN RESERVOIR | 360 |
| 11 | 4204 | CONNEAUT LAKE | 307 |
| 12 | 4226 | PINCHOT LAKE | 256 |
| 13 | 4213 | PYMATUNING RESERVOIR | 206 |
| 14 | 4216 | SHENANGO RIVER RESERVOIR | 157 |
| 15 | 4225 | ONTELAUNEE DAM | 101 |
| 16 | 4201 | BLANCHARD RESERVOIR | 85 |
| 17 | 4207 | GREENLANE DAM | 53 |

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

| LAKE CODE | LAKE NAME | MEDIAN TOTAL P | MEDIAN INORG N | 500-MEAN SEC | MEAN CHLORA | 15-MIN DO | MEDIAN DISS P | INDEX NO |
|---|---|---|---|---|---|---|---|---|
| 3641 | ALLEGHENY RESERVOIR | 56 ( 9) | 38 ( 6) | 63 ( 10) | 100 ( 16) | 69 ( 11) | 50 ( 8) | 385 |
| 4201 | BLANCHARD RESERVOIR | 13 ( 2) | 13 ( 2) | 25 ( 4) | 31 ( 5) | 3 ( 0) | 0 ( 0) | 85 |
| 4204 | CONNEAUT LAKE | 44 ( 7) | 63 ( 10) | 69 ( 11) | 56 ( 9) | 34 ( 5) | 41 ( 6) | 307 |
| 4207 | GREENLANE DAM | 6 ( 1) | 6 ( 1) | 19 ( 3) | 13 ( 2) | 3 ( 0) | 6 ( 1) | 53 |
| 4213 | PYMATUNING RESERVOIR | 0 ( 0) | 72 ( 11) | 6 ( 1) | 0 ( 0) | 100 ( 16) | 28 ( 4) | 206 |
| 4216 | SHENANGO RIVER RESERVOIR | 19 ( 3) | 44 ( 7) | 13 ( 2) | 6 ( 1) | 47 ( 7) | 28 ( 4) | 157 |
| 4219 | BEAVER RUN RESERVOIR | 94 ( 15) | 19 ( 3) | 88 ( 14) | 81 ( 13) | 19 ( 2) | 59 ( 8) | 360 |
| 4220 | BELTZVILLE DAM | 88 ( 14) | 25 ( 4) | 94 ( 15) | 94 ( 15) | 34 ( 5) | 88 ( 13) | 423 |
| 4221 | CANADOHTA LAKE | 50 ( 8) | 97 ( 15) | 56 ( 9) | 19 ( 3) | 59 ( 9) | 88 ( 13) | 369 |
| 4222 | HARVEY'S LAKE | 63 ( 10) | 81 ( 13) | 100 ( 16) | 63 ( 10) | 47 ( 7) | 59 ( 8) | 413 |
| 4223 | INDIAN LAKE | 100 ( 16) | 31 ( 5) | 75 ( 12) | 75 ( 12) | 19 ( 2) | 88 ( 13) | 388 |
| 4224 | LAKE NAOMI | 81 ( 13) | 88 ( 14) | 44 ( 7) | 69 ( 11) | 88 ( 14) | 75 ( 12) | 445 |
| 4225 | ONTELAUNEE DAM | 25 ( 4) | 0 ( 0) | 0 ( 0) | 44 ( 7) | 19 ( 2) | 13 ( 2) | 101 |
| 4226 | PINCHOT LAKE | 31 ( 5) | 56 ( 9) | 31 ( 5) | 38 ( 6) | 81 ( 13) | 19 ( 3) | 256 |
| 4227 | POCONO LAKE | 38 ( 6) | 97 ( 15) | 50 ( 8) | 88 ( 14) | 75 ( 12) | 41 ( 6) | 389 |
| 4228 | STILLWATER LAKE | 72 ( 11) | 72 ( 11) | 38 ( 6) | 25 ( 4) | 94 ( 15) | 100 ( 16) | 401 |
| 4229 | LAKE WALLENPAUPACK | 72 ( 11) | 50 ( 8) | 81 ( 13) | 50 ( 8) | 59 ( 9) | 59 ( 8) | 371 |

LAKE DATA TO BE USED IN RANKINGS

| LAKE CODE | LAKE NAME | MEDIAN TOTAL P | MEDIAN INORG N | 500-MEAN SEC | MEAN CHLORA | 15-MIN DO | MEDIAN DISS P |
|---|---|---|---|---|---|---|---|
| 3641 | ALLEGHENY RESERVOIR | 0.016 | 0.380 | 414.250 | 3.700 | 13.800 | 0.006 |
| 4201 | BLANCHARD RESERVOIR | 0.064 | 1.300 | 453.143 | 15.187 | 14.900 | 0.046 |
| 4204 | CONNEAUT LAKE | 0.023 | 0.185 | 402.000 | 7.567 | 14.600 | 0.007 |
| 4207 | GREENLANE DAM | 0.066 | 1.475 | 460.222 | 24.011 | 14.900 | 0.020 |
| 4213 | PYMATUNING RESERVOIR | 0.070 | 0.180 | 467.750 | 56.333 | 7.700 | 0.008 |
| 4216 | SHENANGO RIVER RESERVOIR | 0.058 | 0.340 | 463.555 | 26.800 | 14.500 | 0.008 |
| 4219 | BEAVER RUN RESERVOIR | 0.009 | 0.835 | 384.833 | 5.183 | 14.800 | 0.006 |
| 4220 | BELTZVILLE DAM | 0.010 | 0.815 | 362.444 | 4.856 | 14.600 | 0.005 |
| 4221 | CANADOHTA LAKE | 0.020 | 0.130 | 436.000 | 19.167 | 14.100 | 0.005 |
| 4222 | HARVEY'S LAKE | 0.015 | 0.160 | 338.000 | 5.967 | 14.500 | 0.006 |
| 4223 | INDIAN LAKE | 0.008 | 0.520 | 400.222 | 5.211 | 14.800 | 0.005 |
| 4224 | LAKE NAOMI | 0.014 | 0.135 | 443.333 | 5.533 | 8.000 | 0.005 |
| 4225 | ONTELAUNEE DAM | 0.040 | 2.150 | 470.667 | 11.783 | 14.800 | 0.011 |
| 4226 | PINCHOT LAKE | 0.027 | 0.245 | 453.000 | 13.950 | 11.500 | 0.008 |
| 4227 | POCONO LAKE | 0.024 | 0.130 | 438.800 | 4.980 | 13.200 | 0.007 |
| 4228 | STILLWATER LAKE | 0.015 | 0.180 | 449.000 | 18.233 | 7.900 | 0.004 |
| 4229 | LAKE WALLENPAUPACK | 0.015 | 0.250 | 394.583 | 9.617 | 14.100 | 0.006 |

# APPENDIX C

## TRIBUTARY FLOW DATA

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best available copy.



LAKE CODE 4225 LAKE ONTARIO

TOTAL DRAINAGE AREA OF LAKE(SQ KM) = 55900

| TRIBUTARY | SUB-DRAINAGE AREA(SQ KM) | JAN | FEB | MAR | APR | MAY | SUMMARIZED FLOWS(CMS) JUN | JUL | AUG | SEP | OCT | NOV | DEC | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4225A1 | 55900 | 12.93 | 17.34 | 27.07 | 23.49 | 14.72 | 5.35 | 3.11 | 4.23 | 3.93 | 3.40 | 10.76 | 15.57 | 11.93 |
| 4225A2 | 404.0 | 8.74 | 11.49 | 19.49 | 19.42 | 10.19 | 4.25 | 2.05 | 3.34 | 2.43 | 2.43 | 7.55 | 11.04 | 8.23 |
| 4225Z1 | 155.4 | 3.71 | 5.21 | 7.41 | 7.33 | 4.35 | 1.71 | 1.11 | 1.49 | 1.19 | 1.19 | 3.25 | 4.59 | 3.54 |

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 55900
SUM OF SUB-DRAINAGE AREAS = 55900

TOTAL FLOW IN = 142.15
TOTAL FLOW OUT = 143.85

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

| TRIBUTARY | MONTH | YEAR | MEAN FLOW | DAY | FLOW | DAY | FLOW | DAY | FLOW |
|---|---|---|---|---|---|---|---|---|---|
| 4225A1 | 5 | 73 | 16.09 | 19 | 9.24 | | | | |
| | 6 | 73 | 14.33 | 9 | 8.24 | | | | |
| | 7 | 73 | 7.07 | 1 | 10.76 | | | | |
| | 8 | 73 | 2.15 | 4 | 4.07 | | | | |
| | 9 | 73 | 4.11 | 1 | 9.61 | | | | |
| | 10 | 73 | 2.73 | 5 | 1.42 | | | | |
| | 11 | 73 | 3.96 | 3 | 5.74 | | | | |
| | 12 | 73 | 24.04 | 1 | 6.57 | | | | |
| | 1 | 74 | 13.40 | 3 | 13.11 | | | | |
| | 2 | 74 | 4.25 | 2 | 14.33 | | | | |
| | 3 | 74 | 13.17 | 2 | 11.23 | | | | |
| | 4 | 74 | 24.10 | 6 | 24.05 | | | | |
| 4225A2 | 5 | 73 | 4.41 | 19 | 3.33 | | | | |
| | 6 | 73 | 8.55 | 9 | 3.54 | | | | |
| | 7 | 73 | 3.15 | 1 | 3.77 | | | | |
| | 8 | 73 | 2.13 | 4 | 3.21 | | | | |
| | 9 | 73 | 3.99 | 6 | 1.13 | | | | |
| | 10 | 73 | 2.44 | 5 | 1.24 | | | | |
| | 11 | 73 | 3.81 | 3 | 3.11 | | | | |
| | 12 | 73 | 23.24 | 1 | 2.43 | | | | |
| | 1 | 74 | 12.71 | 3 | 8.24 | | | | |
| | 2 | 74 | 4.17 | 3 | 14.42 | | | | |
| | 3 | 74 | 12.53 | 2 | 9.77 | | | | |
| | 4 | 74 | 11.51 | 5 | 11.25 | | | | |
| 4225Z1 | 5 | 73 | 3.71 | 19 | 2.32 | | | | |
| | 6 | 73 | 3.21 | 9 | 2.15 | | | | |
| | 7 | 73 | 2.11 | 1 | 3.10 | | | | |
| | 8 | 73 | 1.11 | 4 | 1.13 | | | | |
| | 9 | 73 | 1.11 | 6 | 0.25 | | | | |
| | 10 | 73 | 1.11 | 5 | 0.25 | | | | |
| | 11 | 73 | 1.11 | 3 | 0.42 | | | | |
| | 12 | 73 | 7.11 | 1 | 1.54 | | | | |
| | 1 | 74 | 4.11 | 3 | 3.49 | | | | |
| | 2 | 74 | 1.11 | 3 | 0.0 | | | | |
| | 3 | 74 | 4.11 | 2 | 3.11 | | | | |
| | 4 | 74 | 7.11 | 5 | 7.11 | | | | |

# APPENDIX D

## PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 75/01/27

422501
40 26 45.0 075 56 05.0
ONTELAUNEE DAM
42011 PENNSYLVANIA

11EPALES
3

2111202
0020 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00010 WATER TEMP CENT | 00300 DO MG/L | 00077 TRANSP SECCHI INCHES | 00094 CNDUCTVY FIELD MICROMHO | 00400 PH SU | 00410 T ALK CACO3 MG/L | 00610 NH3-N TOTAL MG/L | 00625 TOT KJEL N MG/L | 00630 NO2&NO3 N-TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 73/04/13 | 16 | 15 0000 | 9.8 | | 10 | 198 | 8.00 | 40 | 0.060 | 0.400 | 3.000 | 0.016 |
| | 16 | 15 0005 | 9.8 | 10.6 | | 190 | 7.60 | 40 | 0.060 | 0.300 | 2.400 | 0.018 |
| | 16 | 15 0015 | 9.8 | 11.0 | | 200 | 7.30 | 39 | 0.060 | 0.400 | 3.000 | 0.017 |
| 73/07/24 | 11 | 35 0000 | 26.6 | | 30 | 196 | 9.10 | 59 | 0.120 | 0.700 | 2.000 | 0.007 |
| | 11 | 35 0005 | 25.8 | 11.9 | | 195 | 9.00 | 60 | 0.120 | 0.700 | 2.000 | 0.009 |
| | 11 | 35 0015 | 20.7 | 0.2 | | 210 | 7.30 | 85 | 0.450 | 0.700 | 2.000 | 0.017 |
| | 11 | 35 0026 | 18.1 | 0.5 | | 170 | 7.00 | 70 | 0.750 | 1.100 | 1.400 | 0.020 |
| 73/10/03 | 00 | 00 0000 | 20.6 | | 42 | 244 | 9.20 | 71 | 0.060 | 1.100 | 1.350 | 0.008 |
| | 00 | 00 0005 | 19.7 | 9.6 | | 246 | 8.50 | 72 | 0.060 | 0.900 | 1.480 | 0.011 |
| | 00 | 00 0015 | 18.6 | 4.2 | | 253 | 7.40 | 78 | 0.270 | 0.600 | 1.880 | 0.011 |

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00665 PHOS-TOT MG/L P | 32217 CHLRPHYL A UG/L |
|---|---|---|---|---|
| 73/04/13 | 16 | 15 0000 | 0.034 | 2.8 |
| | 16 | 15 0005 | 0.020 | |
| | 16 | 15 0015 | 0.039 | |
| 73/07/24 | 11 | 35 0000 | 0.033 | 12.9 |
| | 11 | 35 0005 | 0.046 | |
| | 11 | 35 0015 | 0.040 | |
| | 11 | 35 0026 | 0.057 | |
| 73/10/03 | 00 | 00 0000 | 0.035 | 26.3 |
| | 00 | 00 0005 | 0.043 | |
| | 00 | 00 0015 | 0.030 | |

STORET RETRIEVAL DATE 73/01/27

422502
40 28 16.0 075 55 07.0
UNTELAUNCEE LAKE
42011 PENNSYLVANIA

11EPALES
3

2111202
0014 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00010 WATER TEMP CENT | 00300 DO MG/L | 00077 TRANSP SECCHI INCHES | 00094 CNDUCTVY FIELD MICROMHO | 00400 PH SU | 00410 T ALK CACO3 MG/L | 00610 NH3-N TOTAL MG/L | 00625 TOT KJEL N MG/L | 00630 NO2&NO3 N-TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 73/04/13 | 16 45 | 0000 | 8.4 | | 18 | 190 | 7.80 | 38 | 0.050 | 0.300 | 3.200 | 0.017 |
| | 16 45 | 0004 | 8.4 | 11.4 | | 200 | 7.60 | 37 | 0.060 | 0.300 | 3.200 | 0.016 |
| | 16 45 | 0010 | 8.4 | 11.0 | | 195 | 7.70 | 39 | 0.010K | 0.200 | 3.100 | 0.007 |
| 73/07/24 | 12 05 | 0000 | 26.3 | | 38 | 207 | 9.10 | 53 | 0.090 | 0.800 | 2.000 | 0.007 |
| | 12 05 | 0005 | 25.4 | 10.3 | | 214 | 8.80 | 70 | 0.150 | 0.700 | 2.200 | 0.009 |
| | 12 05 | 0009 | 23.7 | 6.7 | | 235 | 8.30 | 79 | 0.190 | 0.600 | 2.400 | 0.013 |
| 73/10/03 | 00 00 | 0000 | 20.8 | | 38 | 250 | 9.10 | 90 | 0.060 | 0.800 | 1.620 | 0.008 |
| | 00 00 | 0005 | 19.7 | 12.4 | | 257 | 8.80 | 77 | 0.050 | 0.600 | 1.690 | 0.011 |
| | 00 00 | 0010 | 18.7 | 9.0 | | 260 | 8.40 | 80 | 0.100 | 0.500 | 2.040 | 0.019 |

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00665 PHOS-TOT MG/L P | 32217 CHLRPHYL A UG/L |
|---|---|---|---|---|
| 73/04/13 | 16 45 | 0000 | 0.024 | 2.9 |
| | 16 45 | 0004 | 0.034 | |
| | 16 45 | 0010 | 0.015 | |
| 73/07/24 | 12 05 | 0000 | 0.040 | 9.6 |
| | 12 05 | 0005 | 0.048 | |
| | 12 05 | 0009 | 0.048 | |
| 73/10/03 | 00 00 | 0000 | 0.044 | 15.2 |
| | 00 00 | 0005 | 0.073 | |
| | 00 00 | 0010 | 0.064 | |

K VALUE KNOWN TO BE
LESS THAN INDICATED

# APPENDIX E

## TRIBUTARY and WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 75/02/03

4225A1
40 20 48.0 075 56 00.0
MAIDEN CR
42089 7.5 TEMPLE
U/LAKE ONTELAUNEE
26 FT HELD BASE OF DAM
TIEPALES 211120-
4 0000 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P |
|---|---|---|---|---|---|---|---|
| 73/05/14 | 13 40 | | 1.880 | 1.700 | 0.065 | 0.005K | 0.047 |
| 73/06/16 | 12 30 | | 2.000 | 0.885 | 0.037 | 0.008 | 0.040 |
| 73/07/07 | 12 10 | | 2.200 | 3.400 | 0.099 | 0.012 | 0.060 |
| 73/08/04 | 13 05 | | 1.300 | 0.640 | 0.026 | 0.005 | 0.023 |
| 73/09/08 | 13 15 | | 0.350 | 2.900 | 1.000 | 0.023 | |
| 73/10/05 | 13 45 | | 1.450 | 1.050 | 0.025 | 0.012 | |
| 73/11/03 | 13 14 | | 1.400 | 0.750 | 0.084 | 0.020 | 0.080 |
| 73/12/01 | 13 00 | | 2.100 | 1.500 | 0.168 | 0.012 | 0.060 |
| 74/01/05 | 13 25 | | 1.840 | 0.200 | 0.044 | 0.016 | 0.045 |
| 74/02/02 | 13 10 | | 3.700 | 0.400 | 0.027 | 0.020 | 0.045 |
| 74/03/02 | 13 20 | | 3.080 | 0.600 | 0.020 | 0.015 | 0.075 |
| 74/04/06 | 13 02 | | 2.600 | 0.600 | 0.020 | 0.025 | 0.050 |
| 74/04/13 | 12 15 | | 3.080 | 0.200 | 0.025 | 0.016 | 0.045 |

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/02/03

4225A2
40 30 05.0 075 53 14.0
MAIDEN CR
42 7.5 HAMBURG
1/LAKE ONTELAUNEE
HWY 662 BRDG AT MOSELEM
11EPALES 2111204
4 0000 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P |
|---|---|---|---|---|---|---|---|
| 73/05/14 | 14 | 10 | 2.020 | 0.100K | 0.027 | 0.025 | 0.045 |
| 73/06/16 | 12 | 35 | 2.300 | 1.200 | 0.073 | 0.039 | 0.075 |
| 73/07/07 | 12 | 41 | 2.800 | 0.710 | 0.033 | 0.032 | 0.070 |
| 73/08/04 | 13 | 30 | | 0.260 | | | 0.095 |
| 73/09/08 | 13 | 32 | 1.880 | 0.480 | 0.040 | 0.115 | 0.145 |
| 73/10/06 | 12 | 55 | 1.860 | 1.150 | 0.050 | 0.061 | 0.115 |
| 73/11/03 | 13 | 25 | 2.700 | 0.300 | 0.032 | 0.040 | 0.065 |
| 73/12/01 | 13 | 12 | 2.100 | 0.200 | 0.022 | 0.054 | 0.085 |
| 74/01/05 | 13 | 50 | 1.800 | 0.200 | 0.020 | 0.020 | 0.040 |
| 74/02/02 | 13 | 41 | 3.700 | 0.500 | 0.045 | 0.020 | 0.030 |
| 74/03/02 | 13 | 35 | 3.200 | 0.500 | 0.030 | 0.025 | 0.070 |
| 74/04/06 | 12 | 41 | 2.500 | 0.900 | 0.045 | 0.025 | 0.105 |
| 74/04/13 | 12 | 30 | 2.760 | 0.200 | 0.020 | 0.019 | 0.050 |

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/02/02

4225XA TF4225XA P010000
40 31 40.0 075 47 00.0
BOROUGH OF KUTZMAN
42 7.5 KUTZTOWN
T/LAKE ONTELAUNEE
SACOUNY CREEK/MAIDEN CREEK
11EPALES 2141204
4 0000 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P | 50051 FLOW RATE INST MGD | 50053 CONDUIT FLOW-MGD MONTHLY |
|---|---|---|---|---|---|---|---|---|---|
| 73/06/28 | 07 00 | | | | | | | | |
| CP(T)- | | | 8.500 | 3.700 | 0.070 | 5.200 | 6.000 | 0.700 | 0.778 |
| 73/06/28 | 15 00 | | | | | | | | |
| 73/07/27 | 07 30 | | | | | | | | |
| CP(T)- | | | 9.500 | 14.700 | 3.780 | 5.100 | 6.100 | 0.730 | 0.827 |
| 73/07/27 | 14 30 | | | | | | | | |
| 73/08/28 | 08 30 | | | | | | | | |
| CP(T)- | | | 5.700 | 3.700 | 0.630 | 5.900 | 7.100 | 0.620 | 0.690 |
| 73/08/28 | 15 00 | | | | | | | | |
| 73/09/27 | 08 00 | | | | | | | | |
| CP(T)- | | | 4.800 | 13.200 | 3.360 | 6.000 | 6.000 | 0.850 | 0.800 |
| 73/09/27 | 15 00 | | | | | | | | |
| 65/10/26 | 08 00 | | | | | | | | |
| CP(T)- | | | 4.900 | 15.500 | 2.310 | 6.300 | 7.000 | 0.850 | 0.800 |
| 73/10/26 | 15 00 | | | | | | | | |
| 73/11/27 | 08 00 | | | | | | | | |
| CP(T)- | | | 8.100 | 15.000 | 3.000 | 5.600 | 7.000 | 0.800 | 0.810 |
| 73/11/27 | 15 00 | | | | | | | | |
| 73/12/27 | 08 00 | | | | | | | | |
| CP(T)- | | | 6.700 | 3.000 | 0.041 | 1.380 | 2.050 | 2.000 | 1.300 |
| 73/12/27 | 15 00 | | | | | | | | |
| 74/01/28 | 08 00 | | | | | | | | |
| CP(T)- | | | 7.200 | 10.000 | 0.480 | 3.300 | 7.200 | 1.300 | 1.170 |
| 74/01/28 | 15 00 | | | | | | | | |
| 74/02/28 | 07 00 | | | | | | | | |
| CP(T)- | | | 6.900 | 8.600 | 0.290 | 3.750 | 4.700 | 1.000 | 1.200 |
| 74/02/28 | 14 00 | | | | | | | | |
| 74/03/28 | 07 00 | | | | | | | | |
| CP(T)- | | | 5.700 | 4.700 | 0.050K | 3.150 | 3.900 | 1.200 | 1.100 |
| 74/03/28 | 14 00 | | | | | | | | |
| 74/04/26 | 07 00 | | | | | | | | |
| CP(T)- | | | 5.700 | 7.500 | 0.420 | 4.200 | 5.300 | 0.900 | 1.100 |
| 74/04/26 | 14 00 | | | | | | | | |
| 74/05/28 | 08 00 | | | | | | | | |
| CP(T)- | | | 14.300 | 8.300 | 0.050K | 4.000 | 5.200 | 0.620 | 0.846 |

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/02/02

4225XA TF4225XA P010000
40 31 40.0 075 47 00.0
BOROUGH OF KUTZMAN
42 7.5 KUTZTOWN
T/LAKE ONTELAUNEE
SACOUWY CREEK/MAIDEN CREEK
11EPALES 2141204
4 0000 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P | 50051 FLOW RATE INST MGD | 50053 CONDUIT FLOW-MGD MONTHLY |
|---|---|---|---|---|---|---|---|---|---|
| 74/06/28 | 12 30 | | 10.050 | 15.000 | 3.000 | 4.400 | 5.400 | 0.690 | 0.660 |

STORET RETRIEVAL DATE 75/02/03

422524A SP422524A P0000007
40 34 00.0 075 46 00.0
BLUE ROCK MOUNTAIN SPRING WATER
42 7.5 NEW TRIPOLI
T/LAKE UNTELAUNEE
UNTELAUNEE CREEK/MAIDEN CREEK
LEHIGH 2141204
4 0000 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P | 50051 FLOW RATE INST MGD | 50053 CONDUIT FLOW-MGD MONTHLY |
|---|---|---|---|---|---|---|---|---|---|
| 73/08/08 | 14 50 | | 5.900 | | 0.500 | 1.200 | 2.600 | 0.001 | 0.001 |
| 73/10/10 | 11 00 | | 13.400 | 0.500K | 0.010K | 4.750 | 5.300 | 0.001 | |
| 74/01/23 | 08 00 | | 1.680 | 5.200 | 0.890 | 0.440 | 0.470 | 0.001 | 0.001 |
| 74/04/11 | | | 0.920 | 5.000 | 1.700 | 0.820 | 1.000 | 0.001 | 0.001 |
| 74/06/12 | 12 00 | | 18.420 | 2.500 | 0.182 | 4.825 | 5.250 | 0.001 | |
| 74/07/12 | 14 00 | | 13.400 | 6.000 | 0.320 | 3.600 | 4.000 | 0.001 | 0.001 |
| 74/09/13 | 13 15 | | 5.900 | 0.710 | 0.075 | 4.000 | 4.550 | 0.001 | 0.001 |
| 74/09/20 | 14 00 | | 15.000 | 1.950 | 1.900 | 4.300 | 4.600 | 0.001 | 0.001 |
| 74/10/17 | 15 00 | | 5.975 | 1.000K | 0.490 | 3.900 | 3.900 | 0.001 | |
| 74/11/14 | 08 00 | | 5.800 | 1.000K | 0.110 | | 1.350 | 0.001 | 0.001 |
| 74/11/21 | 09 00 | | | | | | | 0.001 | 0.001 |

K VALUE KNOWN TO BE
LESS THAN INDICATED